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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,224	02/15/2002	Dong-Ha Shim	030681-359	7856

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EXAMINER

MANDALA, VICTOR A

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 01/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/075,224

Applicant(s)

SHIM, DONG-HA

Examiner

Victor A Mandala Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 10, 11, and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Applicant's Amendments

1. The examiner has noted the corrections to the drawings and has recognized formal drawings will be submitted later.
2. The Applicant argues that the 35 USC 102(b) rejection anticipated by the Applicant's Admitted Prior Art on Claims 1 & 5 should be reconsidered and the examiner agrees. The rejection is withdrawn.
3. The Applicant argues that the 35 USC 102(e) rejection anticipated by U.S. Patent No. 6,307,452 Sun on Claims 1-8 should be reconsidered and the examiner agrees. The rejection is withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior art.

4. Referring to claim 1, a MEMS device having flexible elements with nonlinear restoring force comprising, (Applicant's Admitted Prior Art Figure 1): a substrate, (1); support elements, (4), formed on the substrate, (1); a moveable element, (2 or Figure 3 #30), floated over the substrate, (1), by the support elements, (4), so as to move; flexure elements, (3), for elastically suspending the moveable element, (2 or Figure 3 #30), on the support elements, (4), a driving element, (Figure 3 #52), for moving the moveable element, (2 or Figure 3 #30); repulsive elements, (#3), for increasing the repulsive force of the flexure elements, (3), when the flexure elements, (3), supporting the moveable element, (2 or Figure 3 #30), are resiliently deformed by a predetermined amount, (Figure 4 #40), during movement of the moveable element, (2 or Figure 3 #30).

The Applicant's Admitted Prior Art teaches that the flexure element #3 does have a repulsive element, which is shown in Figures 3, 4, & 5. Figure 5 shows in more detail that the spring or flexure element does have a repulsive force.

Initially, it is noted that the 35 U.S.C. § 103 rejection based on a flexure element and a repulsive element deals with an issue (i.e., the integration of multiple pieces into one piece or conversely, using multiple pieces in replacing a single piece) that has been previously decided by the courts.

In Howard v. Detroit Stove Works 150 U.S. 164 (1893), the Court held, "it involves no invention to cast in one piece an article which has formerly been cast in two pieces and put together...."

In In re Larson 144 USPQ 347 (CCPA 1965), the term "integral" did not define over a multi-piece structure secured as a single unit. More importantly, the court went further and stated, "we are inclined to agree with the solicitor that the use of a one-piece construction instead of the [multi-piece] structure disclosed in Tuttle et al. would be merely a matter of obvious engineering choice" (bracketed material added). The court cited In re Fridolph for support.

In re Fridolph 135 USPQ 319 (CCPA 1962) deals with submitted affidavits relating to this issue. The underlying issue in In re Fridolph was related to the end result of making a multi-piece structure into a one-piece structure. Generally, favorable patentable weight was accorded

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if the one-piece structure yielded results not expected from the modification of the two-piece structure into a single piece structure.

Therefore, it would have been obvious to one of ordinary skill in the art to use the flexure element and the repulsive element as "merely a matter of obvious engineering choice" as set forth in the above case law.

Initially, and with respect to claim 1, note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Fitzgerald, 205 USPQ 594, 596 (CCPA); In re Marosi et al., 218 USPQ 289 (CAFC); and most recently, In re Thorpe et al., 227 USPQ 964 (CAFC, 1985) all of which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that Applicant has burden of proof in such cases as the above case law makes clear.

As to the grounds of rejection under section 103, see MPEP § 2113

The Applicant is adding the process of use to claim 1 by stating, "the moveable element are resiliently deformed by a predetermined amount during movement of the movable element".

What is being examined is the claimed physical structure of the device and not the process of use.

5. Referring to claim 5, the MEMS device, wherein the moveable element moves in a direction perpendicular to the plane of the substrate, (Applicant's Admitted Prior Art Page 2 Line 4 of the Application).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,307,452 Sun.

6. Referring to claim 1, a MEMS device having flexible elements with nonlinear restoring force comprising: a substrate, (Sun's Figure 5A #12); support elements, (Sun's Figure 5A #24), formed on the substrate, (Sun's Figure 5A #12); a moveable element, (Sun's Figure 5A #20), floated over the substrate, (Sun's Figure 5A #12), by the support elements, (Sun's Figure 5A #24), so as to move; flexure elements, (Sun's Figure 5A #22), for elastically suspending the moveable element, (Sun's Figure 5A #20), on the support elements, (Sun's Figure 5A #24), a driving element, (Sun's Figure 5A #14), for moving the moveable element, (Sun's Figure 5A #20); repulsive elements, (Col. 4 Lines 17-19), for increasing the repulsive force of the flexure elements, (Sun's Figure 5A #22), when the flexure elements, (Sun's Figure 5A #22), supporting the moveable element, (Sun's Figure 5A #20), are resiliently deformed by a predetermined amount, (Sun's Figure 5B shows the flexure elements deformed while in the on state), during movement of the moveable element, (Sun's Figure 5A #20).

Initially, and with respect to claim 1, note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See

also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Fitzgerald, 205 USPQ 594, 596 (CCPA); In re Marosi et al., 218 USPQ 289 (CAFC); and most recently, In re Thorpe et al., 227 USPQ 964 (CAFC, 1985) all of which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that Applicant has burden of proof in such cases as the above case law makes clear.

As to the grounds of rejection under section 103, see MPEP § 2113

The Applicant is adding the process of use to claim 1 by stating, "the moveable element are resiliently deformed by a predetermined amount during movement of the movable element".

What is being examined is the claimed physical structure of the device and not the process of use.

7. Referring to claim 2, the MEMS device, wherein the repulsive elements include stoppers, (Sun's Figure 5A # 26), having a predetermined size positioned between the flexure elements, (Sun's Figure 5A #22), and static elements, (Sun's Figure 5A #14 & 20), fixed on the substrate, (Sun's Figure 5A #12), opposite to the flexure elements, (Sun's Figure 5A #22).

8. Referring to claim 3, the MEMS device, wherein the stoppers, (Sun's Figure 5A #26), are positioned at portions of the static elements, (Sun's Figure 5A #14 & 20), opposite to the flexure elements, (Sun's Figure 5A #22), so that middle portions of the flexure elements, (Sun's Figure 5A #22), contact stoppers, (Sun's Figure 5A #26), when the flexure elements, (Sun's Figure 5A #22), are resiliently deformed by a predetermined amount, (Sun's Figure 5B shows the flexure elements deformed in the on state).

9. Referring to claim 4, the MEMS device, wherein the stoppers, (Sun's Figure 5A #26), are formed on middle portions of the flexure elements, (Sun's Figure 5A #22), opposite to the static elements, (Sun's Figure 5A #14 & 20), so that the stoppers, (Sun's Figure 5A #26), contact the

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static elements, (Sun's Figure 5A #14 & 20), when the flexure elements, (Sun's Figure 5A #22), are resiliently deformed by a predetermined amount, (Sun's Figure 5B shows the flexure elements deformed and the contact of the stoppers with #20).

10. Referring to claim 5, the MEMS device, wherein the moveable element, (Sun's Figure 5A #20), moves in a direction perpendicular to the plane of the substrate, (Sun's Figure 5A #12), (Sun shows the moveable element to move in the perpendicular to the plane of the substrate in Figures 5A & 5B, which show the on and off states of the circuit).

11. Referring to claim 6, the MEMS device, wherein the moveable element, (Sun's Figure 5A #20), moves in a direction perpendicular to the plane of the substrate, (Sun's Figure 5A #12), (Sun shows the moveable element to move in the perpendicular to the plane of the substrate in Figures 5A & 5B, which show the on and off states of the circuit).

12. Referring to claim 7, the MEMS device, wherein the moveable element, (Sun's Figure 5A #20), moves in a direction perpendicular to the plane of the substrate, (Sun's Figure 5A #12), (Sun shows the moveable element to move in the perpendicular to the plane of the substrate in Figures 5A & 5B, which show the on and off states of the circuit).

13. Referring to claim 8, the MEMS device, wherein the moveable element, (Sun's Figure 5A #20), moves in a direction perpendicular to the plane of the substrate, (Sun's Figure 5A #12), (Sun shows the moveable element to move in the perpendicular to the plane of the substrate in Figures 5A & 5B, which show the on and off states of the circuit).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 & 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Patent Publication 2002/0145493.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

14. Referring to claim 1, a MEMS device having flexible elements with nonlinear restoring force comprising: a substrate; support elements, (Wang's Figure 2 #40), formed on the substrate; a moveable element, (Wang's Figure 2 #28), floated over the substrate by the support elements, (Wang's Figure 2 #40), so as to move; flexure elements, (Wang's Figure 2 #4), for elastically suspending the moveable element, (Wang's Figure 2 #28), on the support elements, (Wang's Figure 2 #40), a driving element, (Wang's Figure 2 #16 and 48), for moving the moveable element, (Wang's Figure 2 #28); repulsive elements, (Wang's Figure 2 #4), for increasing the repulsive force of the flexure elements, (Wang's Figure 2 #4), when the flexure elements, (Wang's Figure 2 #4), supporting the moveable element, (Wang's Figure 2 #28), are resiliently deformed by a predetermined amount during movement of the moveable element, (Wang's Figure 2 #28).

Initially, and with respect to claim 1, note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hira, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Fitzgerald, 205 USPQ 594, 596 (CCPA); In re Marosi et al., 218 USPQ 289 (CAFC); and most recently, In re Thorpe et al., 227 USPQ 964 (CAFC, 1985) all of which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that Applicant has burden of proof in such cases as the above case law makes clear.

As to the grounds of rejection under section 103, see MPEP § 2113

The Applicant is adding the process of use to claim 1 by stating, "the moveable element are resiliently deformed by a predetermined amount during movement of the movable element".

What is being examined is the claimed physical structure of the device and not the process of use.

15. Referring to claim 9, a MEMS device, wherein the movable element, (Wang's Figure 2 #28), moves in a direction parallel to the plane of the substrate.

Allowable Subject Matter

16. Claims 10, 11, and 12 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

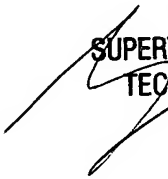
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor A Mandala Jr. whose telephone number is (703) 308-6560. The examiner can normally be reached on Monday through Thursday from 8am till 6pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

VAMJ
January 10, 2003

 NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800